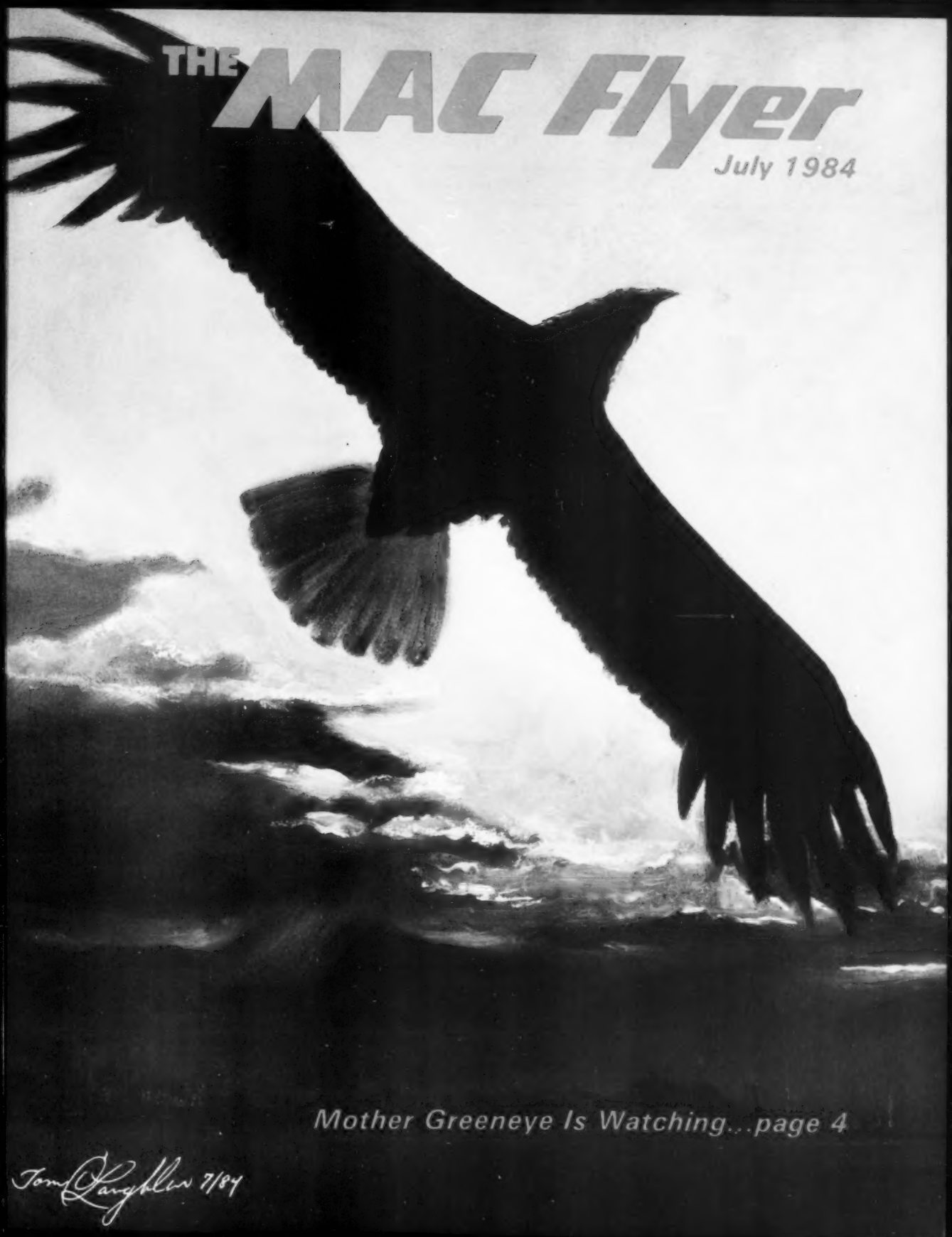
THE MAC Flyer
July 1984
Mother Greeneye Is Watching...page 4
Tom Laughlin 7/84

THE MAC Flyer

For Greater Safety in MAC Air Operations

JULY 1984 | MACRP 127-5 | VOL XXXI NO. 7

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About The Cover: Original oil painting by Tom O'Laughlin

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The Winners

1984 MAC Flying Safety Writing Contest

First Place

"Mother Greeneye is Watching"
by Capt. Jerry M. Brewton
Det 1, 40 ARRS
Homestead AFB, Florida

Second Place

"Deja Vu: A Classmate Remembered"
by 1st Lt. Stephen J. Robison
1407 MAS
Andrews AFB, Maryland

Third Place

"Ironies"
by Maj. Bud Baker
USAF Academy
Colorado Springs, Colorado

Special Category Winners

"The Grey Wings of an Eagle"
by Maj. Grover C. Tate, USAF (Ret)
Joshua, Texas

"Real Pilots Don't Eat Parsley"
by Maj. Bruce L. Gumble, USAF (Ret)
Vacaville, California

Honorable Mention Winners

"Murphy Takes A Holiday"
by Capt. Thomas R. Kogler
50 TAS
Little Rock AFB, Arkansas

"Sir, We Have An Emergency"
by Maj. Peter P. Zapalo, Jr
1 MAS
Andrews AFB, Maryland

"There's Them That Have, and Them That Will, But You Don't Have To!"
by 1st Lt. Ray Duncan
71 FTW
Vance AFB, Oklahoma

"How Do You Plead?"
by SMSgt. James W. Swanson
76 MAS
Charleston AFB, South Carolina

"Two Hours Outta Goose"
by Capt. Antony R. Watzke
50 TAS
Little Rock AFB, Arkansas

"A Question of Complacent Responsibility"
by Capt. James B. Zazas
39 TAS
Pope AFB, North Carolina

"Icarus"
by Lt. Col. Edward B. Borden, (USAFR)
HQ MAC/PA
Scott AFB, Illinois

"One Time Good Deal"
by Maj. Myron G. Ashcraft
179 TAG (ANG)
Mansfield Lahm Airport, Ohio

"Striking the Balance"
by Maj. Gregory B. Colvin
HQ USAF/XOOS
Washington, D.C.

Fifty-one officers, fourteen enlisted, and five civilians produced 74 entries for the 1984 MAC Flying Safety Writing contest. All participants are already enjoying their C.R. Terror T-shirts and will begin receiving their free one-year personal subscriptions to the *Flyer* with this issue.

First, second, and third place winners will receive handsome desk sets attesting to their literary abilities. Honorable mention and special category winners will each receive an engraved wall plaque. A contest-winning story will appear in each issue of *The MAC Flyer* during the next twelve months, beginning with Capt. Jerry Brewton's 1984 first-place winner, "Mother Greeneye Is Watching," page 4.

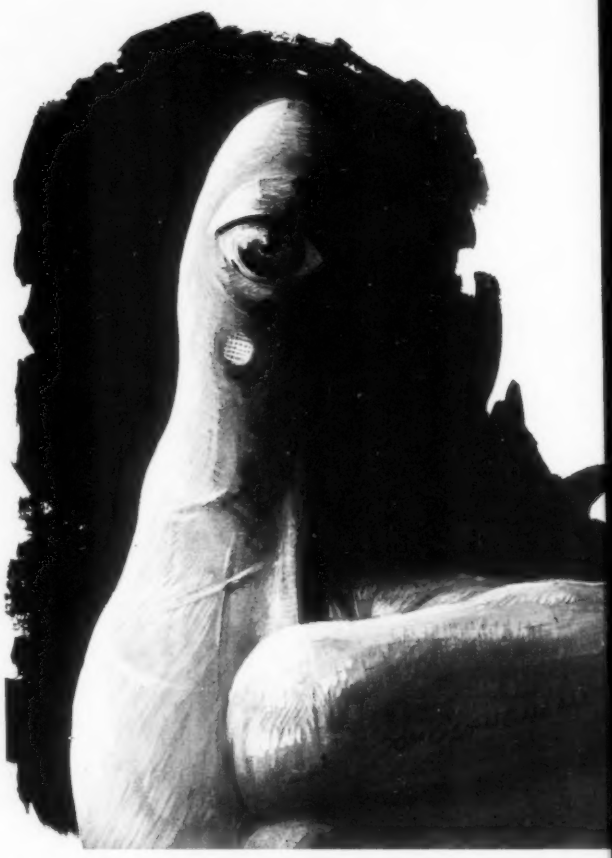
Competition was as usual, keen, with a variety of prose and poetry challenging our judges. We appreciate the exceptionally high quality of the manuscripts and recognize the imagination and hard work that went into writing them.

Remember, the 1985 writing contest begins on 1 November, so start planning your winning entry now!

Mother Greeneye Is Watching

Have *You* Checked *Your* Thumb Lately?

by Capt. Jerry M. Brewton
Det 1, 40 ARRS
Homestead AFB, Florida



Filbert vividly remembered the day the chips were installed in his thumb.

"Don't worry," Dr. Jeckly had told him. "It only takes a couple of minutes and it won't hurt at all. You do more damage every time you cut yourself shaving."

"But Doc," Filbert had protested, I really don't want anything implanted in my thumb. Especially not a computer chip. What's it for anyway?"

"Progress, boy," the old flight surgeon had replied. "Everybody'll have one within five years. Your squadron just happens to be the first to get them. Now let's see how this thing works. Put your thumb here on the scanner."

Filbert dutifully placed his thumb over the luminous green light emitting from a small box on the doctor's desk. He was surprised by the box's response. It spoke!

"Filbert, Dexter X., Captain, 074-00-3100, A-pos, aircraft commander, 1182 MAW, pulse 72, BP 128 over 84. I find you physically sound. Have a nice day."

"How's it do it?" Filbert asked.

"Simple," the doctor replied. "One of the chips has your identity on it. Name, rank, SSAN, the whole nine yards. The other is a miniature transmitter that constantly monitors your body's vital signs and blood chemistry. It can tell quite a lot about you in a single scan. The scanner is just an improved version of the kind the supermarket checkers use. When you think about it, this thing has unlimited potential."

As time passed, Filbert began to realize that quite a few people must have been thinking about the scanner's potential uses. Restricted area badges became a thing of the past. Instead, scanners were used to identify and determine access—simply place your thumb over the scanners on the flight line or in the ops center. Once scanners were installed in all the billeting offices, registration became a simple matter of placing your thumb on the scanner and you were signed in in a matter of seconds. Scanners in the clubs

First Place Winner, 1984 MAC Flying Safety Writing Contest

made it possible to charge meals with the flash of a thumb and a signature on the bill. By the time five years had passed, scanners were everywhere. Everyone had grown accustomed to them. In fact, everyone liked them. Then the changes began. The scanners became more powerful. They no longer needed direct access to identify and evaluate. They could literally read a thumb from a hundred yards. *And, they began to give orders.*

For years, the scanners which had been installed in the cockpit of every aircraft, had remained silent boxes that spoke only when someone wanted to check his heartbeat to make sure he hadn't died of boredom on a long flight. One day, the scanners assumed a new role. They began to make demands on the crews. Filbert learned about it six hours out of Charleston on a direct flight to Frankfurt.

"Captain Dexter." Filbert immediately recognized the mechanical monotone in his headset. He suspected some sort of malfunction and ignored the machine. It called again, "Filbert, I'm talking to you."

Filbert decided to break the monotony and entertain the crew by having a conversation with the black box. He turned to face it. "Yeah Greeneye, what do you want?"

Much to the entire crew's surprise the scanner answered. "Your blood sugar appears to be slightly elevated and my sensors detect a large amount of caffeine in your system. You need to eat something."

Filbert quickly realized the scanner's powers had been increased, but he had no intention of taking orders from a machine.

"Gee, Mom, I'm really not hungry right now," he said, and looked to his crew who were starting to chuckle at the scene.

"I said you need to eat something. If you don't, I'll burn your thumb."

Almost immediately, a sharp pain shot through Filbert's thumb, proving the scanner meant business. Filbert winced. "You have the controls," he said, turning to his copilot. "I think I'll break out a box lunch."

Filbert had to admit he felt better after the sandwich and chicken leg, but he spent the rest of the flight eying the small scars on his thumb and wondering what would come next.

As they began their descent into Frankfurt the scanner spoke again—this time it seemed impatient with Filbert's copilot.

"Lieutenant Foople, if you don't put that cigarette out this instant I'll burn your thumb." Foople remembered Filbert's earlier experience and immediately extinguished the cigarette he'd just lit.

From that day forward, the scanners played an increasingly larger role in the crews' lives. From the moment a crew departed home station until they returned, the ever-present green eye watched them. The slightest violation of aircrew discipline brought a reminder from the nearest black box. Failure to heed a warning resulted in punishment. Very few crewmembers could say they had never had their thumb burned for something. "Mother Greeneye is watching," became a standard warning.

Road trips became very boring affairs. No one dared stay in the bar one second past crew rest limits. One blink from the scanner was much more effective than any bartender saying "last call." With the scanner watching, last call was frequently well before closing time. The scanners in the transient quarters put an end to late night poker games, and even going off base provided no relief. You always had to face the scanner when you returned. You received an immediate evaluation when you passed the first scanner.

To make matters worse, the machines were beginning to sound almost human. "Good evening, Captain Filbert. It seems you've had a good evening. You've eaten well, no excess drinking, and you're back in time to get a good night's sleep." Or, "Lieutenant Foople, where the hell have you been? Straggling in here six hours before crew show. *And* your biological readings are a disgrace. Nothing in your system but German beer and pretzels. You won't be flying tomorrow. Remember this the next time you try to fool me." Foople staggered away, clutching his burning thumb.

The machine even seemed to be developing a sense of humor. "Good morning, Sergeant Oxnard. Where were you last night? Your bio readings are in perfect shape so you couldn't have been out with the boys. Oh, Chanel 19, my favorite fragrance. Good thing I'm not into blackmail."

Even with a sense of humor the machines were universally hated. Everyone harbored a secret desire to smash those probing green

eyes with a hammer. It took a near disaster to change Filbert's opinion.

"Filbert, your bio readings have become very erratic—pulse and BP are way up and your system is saturated with adrenalin. Is something wrong?"

"Just once Greeneye I wish you'd shut up! Is something wrong? Hell, everything is wrong. We have an engine out, the field is right at minimums with blowing snow, there's a 30-knot crosswind, our alternate is closed for ice on the runway, we burned most of our fuel in a holding pattern, the last plane down final went around because he hit a severe wind shear at 300 feet, and now our nose gear is indicating unsafe. And you ask if there's something wrong? If you weren't a machine you'd be a little hyper too." Greeneye didn't respond.

Filbert's mind raced as he tried to evaluate all that could happen on the approach. He'd just finished briefing his crew for the second time when the scanner spoke.

"You can do it Filbert. I know you can. I've just evaluated your records. You flew an engine-out crosswind approach just 28 days ago. You've made approaches in weather as bad as this six times in the last five months, and you've landed on slippery runways hundreds of times. That wind shear will be exactly like the one you had in the simulator last August. Just take things one step at a time and we'll be fine."

For once the scanner's voice had a very soothing effect on Filbert. The approach was flawless, and Filbert was in line for a round of well deserved "attaboys."

Later, in his room, Filbert eyed the scanner as he sipped a coke. "You there, Greeneye?" he questioned.

"I'm always here, Filbert."

"I, uh, just wanted to say thanks for the help."

"My job, Filbert."

"I thought your job was harassing aircrews, not helping them out of tight spots."

"My job is keeping you mentally and physically ready to fly. I do it well. There are many days when you can get by with hangovers, hypoglycemia, or someone who's half asleep. Then there are days like today when everyone has to be ready to give 100 percent mentally and physically. Your crew had flown 35 hours in the last six days, but today they were ready. Maybe because of my harassment or maybe because they're all professionals. Either way, they were ready. All I did was remind you that you'd done it all before. You're the ones who flew the aircraft and brought it in safely."

"Well, Greeneye, I used to hate you. But I don't anymore," Filbert mumbled.

"It doesn't matter, Filbert. I'm just a very complex computer program with a specific job to do. There are no feelings involved. Now you need food and rest. If TA works a miracle on that pig you rode in today, you're flying again tomorrow."

"Are you going to burn my thumb if I have a couple of extra beers to celebrate tonight?"

'You know I will."

Filbert grabbed his jacket and headed out the door. After he'd left, the scanner's green light moved slowly about the room as if searching to make sure he was gone. Then it flashed a picture that covered the entire wall, men and women of all ages wearing flight suits. "Mother Greeneye has so many children," it hummed. "I'll take care of you."

ABOUT THE AUTHOR

An OTS graduate, Captain Brewton completed UPT-H in 1971. He then served a tour in Thailand flying HH-43s, before being reassigned to Little Rock AFB, Arkansas, where he flew HH-1Hs. After a brief separation from the Air Force, Captain Brewton returned to the Air Force in 1979, and flew HH-1Ns at Ramstein AB, Germany, until 1982. He is now the operations officer of Det 1, 40 ARRS, Homestead AFB, Florida. A prolific writer, Captain Brewton began contributing to the MAC Flying Safety Writing Contest in 1976, and he's been either an honorable mention winner or a first-place winner in nearly every contest since.

AWTH's Corner

Bravo Alert Boo-boo

Primary factors: Preoccupation, crew coordination.

Contributing factors: Insufficient rest, weather.

Bravo alerts! Sometimes you launch; sometimes you don't. But the danger of a bravo alert comes in launching at or near the end of an alert "window," then flying a full crew duty day after that. To illustrate that point, here is the story of one pilot as submitted on MAC Form 325, the AWTH form.

"We launched at the end of our alert period. We shot an approach to our arrival base close to midnight. On the first approach, with minimums at 200 feet AGL (this was a precision approach), we finally initiated a missed approach after passing more than 150 feet *through* decision height. We had less than 50 feet of ground clearance, no ground references, and no 'go-around' calls at decision height made by any crewmember. The next approach was successful. We were lucky, this time."

Although there are several unanswered questions posed by this report, we're very lucky this crew is still around to tell their story! But was the crew more or less alert on the second approach? As you might have guessed by now, the AWTH submitter listed preoccupation and crew coordination as the primary causes of this incident.

Over-Extended; Very Lucky!

Primary factors: Task saturation; over-extended capabilities; crew coordination; poor technique; and preoccupation.

"If you think it can't happen to you, you're *wrong*. Our highly experienced crew, with over 25,000 hours of total experience, inadvertently descended below minimums during a night VMC approach while the base radar was out of service. The '100 feet above' and 'MDA' calls were never made because both my copilot and I had focused our attention on the INS drift and groundspeed trying to locate a suspected wind shear. Consequently, the aircraft came dangerously close to crashing on final approach. The deviation was momentary, and we landed without further incident. The INS information we were looking for could have been easily determined by a navigator or qualified jump-seat occupant. If these things can happen to a seasoned MAC aircrew, they can certainly happen to you."

What more can we say? Beware, stay alert and use the other crewmembers in the cockpit!

Dangerous Cargo

Some Things Were Never Meant to Fly

Every day, thousands of pounds of dangerous cargo are sent around the world by air. When packed and handled correctly, they are perfectly safe. However, when exposed to the environment of air transport, they can, if not properly packed and handled, become as dangerous as a hijacker's bomb!

"Some things were never meant to fly." That's the message to give to people wanting to take or send potentially dangerous goods on board an aircraft. They are being urged to ask first, for safety's sake, what they can or can't take on an aircraft.

To show why, we listed some dangerous cargo incidents reported in recent years.

United Kingdom

- A smoking suitcase containing a broken gallon glass jug of nitric acid, no less, was pulled off an aircraft just before the bag caught fire.
- The cork came off a bottle of acid in a repair kit checked as passenger baggage, causing considerable damage to the aircraft.
- A passenger insisted on holding his briefcase in his lap. When the flight attendant tried to stow the bag under the seat, the passenger resisted. It turned out that the case contained six quart-bottles of sulphuric acid.
- A baggage handler was cut by flying fragments and one of his eardrums was injured when 10 *practice hand grenades*, five firecrackers, and a smoke bomb packed in a coffee can in a passenger's bag, exploded.
- While luggage was being loaded into an aircraft, ground personnel noted a powder-like smell and smoke coming from one of the bags. Two of 91 books of matches had ignited.

Australia

- Aboard a Fokker F27, a passenger was carrying a bottle of ammonia in her hand luggage. The ammonia spilled into the passenger cabin. Because of the fumes, the crew went on oxygen and the aircraft returned to it's departure point.
- During turnaround of a Douglas DC-9, a pungent smell was noticed in the rear cargo locker. Subsequent unloading revealed a damaged can of methyl ethyl ketone (MEK). In addition, inspectors found a container holding 700 rounds of explosive charges.
- Before boarding a Fokker F27, a passenger checked in five pieces of luggage, including two cardboard cartons. He didn't indicate that the cartons contained hydrochloric acid. As the cartons were travelling along the bagage conveyor belt, one tumbled down the 45-degree slope. It was removed from the

belt and placed on a dolly. Because of the odor coming from the carton, and the violent reaction of the spilled fluid, ground staff investigated further and found that the carton contained acid.

United States

Perhaps the worst aircraft accident attributed to dangerous cargo was in 1973 when the three-man crew of a Pan American Boeing 707 freighter was killed when the aircraft crashed near Boston while trying to make an emergency landing. Investigators found that the crew had been overcome by fumes from a cargo of incorrectly packed nitric acid, which had leaked and reacted with the sawdust in which it was packed.

The possibility always exists that worse accidents, for which it was not possible to determine a reason, may have been caused by dangerous cargo.

Dangerous Cargo

Below are some things *forbidden* in hand luggage or luggage destined for the hold of an aircraft.

Explosives: fireworks, flares, toy gun caps.

Compressed Gases: gas cylinders and aerosols other than limited quantities of medicinal and toiletry articles which are necessary for the journey.

Flammable Liquids and Solids: lighter fuel, matches, paints, thinners, fire lighters, cigarette lighters containing unabsorbed lighter fuel.

Oxidizers: some bleaching powders and certain acids.

Organic Peroxides: such as hair or textile dyes, disinfectants, fiberglass repair kits and certain adhesives.

Poisons: arsenic, cyanide, weedkillers.

Irritating Materials: tear gas devices.

Infectious Substances: live virus materials, pathological samples.

Radioactive Materials: research or medical samples which contain radioactive sources.

Corrosives: acids, alkalis, wet cell-type car batteries, caustic soda, mercury.

Magnetized Materials: magnetrons and instruments containing magnets.

Other Dangerous Cargo: dry ice, oil-impregnated rags.

All of these goods can be shipped as cargo if properly packed and declared. People should contact their airline for more information.

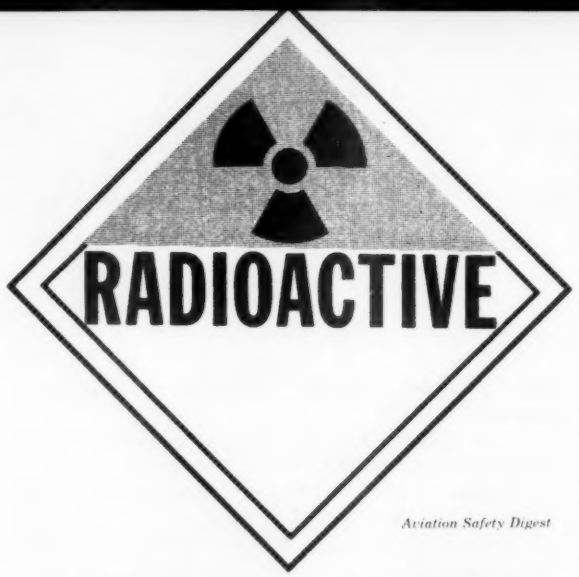
Why Are Some Things Dangerous?

Gas Cigarette Lighters. Lighters containing liquefied gas under pressures experienced in an aircraft cabin may be hazardous when operated during flight. The popular plastic disposable lighters are not fitted with a means of protecting the gas release valve against inadvertent operation. Such operation of a disposable lighter in baggage could release the entire contents into an aircraft compartment. These lighters contain sufficient gas to cause a powerful explosion.

Lighter Fluid is a highly volatile and highly flammable liquid which can produce an explosive concentration of vapor in an enclosed space.

Book Matches can easily have the protective flap dislodged when moved about in luggage. There have been several incidents where the flap has been dislodged and a fire started when match heads rubbed against the striking surface of another book of matches.

Ammunition includes all kinds of bombs, grenades, rockets, projectiles or other devices containing incendiary, smoke, tear-producing, or toxic agents. These contain either an explosive-igniting device, a burster, an expelling charge or a propellent charge. Ammunition presents a risk of a fire and/or an explosion as well as the possibility of tear-producing gases, poisonous gases, smoke or a projection hazard.



Aviation Safety Digest

Solvents and adhesive often contain acetone, methanol, MEK and acrylonitrile, which are very flammable and in some cases, such as methanol and acrylonitrile, toxic. Therefore, if a spillage or a leakage of adhesive or solvents occurs, there is a risk of a fire hazard and, depending on the type of solvent or adhesive, there may also be a toxicity hazard.

Easily Vaporized Liquids are mainly solvents, such as methylated spirits, gasoline, naphtha, ether, etc., which are highly flammable. They are also very volatile, emitting flammable fumes. A risk of a fire or explosion will result if a leakage occurs. Therefore, the packaging used for such volatile liquids must be capable of withstanding the internal pressures encountered when these liquids are transported by air.

Wet Cell Batteries consist of metal plates immersed in an electrolyte liquid, either a dilute sulphuric acid or potassium hydroxide. Both of these electrolytes are corrosive liquids. These batteries could cause damage either through spillage or accidental short-circuiting of the terminals, which could result in a fire.

Mercury is a metal which remains in liquid form at temperatures as low as -38°C. It gives off toxic fumes at high temperatures and low pressures. Liquid mercury will very quickly penetrate aluminum and cause it to become brittle and weak. As most aircraft parts are produced from aluminum, it can cause severe structural damage if spilled in an aircraft, especially because it's difficult to trace and remove.

Paints include enamels, lacquers, stains, shellac, varnish, polish and thinners. These all contain solvents which are highly flammable.

Unless the container is tightly and effectively sealed and packed, the reduced air pressure in an aircraft cargo hold could cause the can lid to pop open and the contents to spill.

Household Cleaners, such as detergents, stain removers, bleaches, etc., can contain either chlorides or ammonias. Many bleaching powders contain strong oxidizers, which react with other materials producing fumes, smoke and fire. Some detergents and stain removers contain ammonia, which is very corrosive and reacts with oxidizing materials. Ammonia also produces toxic fumes. There have been instances where aircraft have had to return to an airport due to ammonia fumes affecting the crew and passengers.

Acids present a number of hazards depending on the particular type. In general, they are corrosive and will attack most types of metal alloys and materials used in aircraft. They can also cause very severe burns when in contact with the skin. Some acids, such as nitric and perchloric, are strong oxidizers. If spilled, they could combine with other substances and create a fire or, worse still, an explosion. When heated, the majority of acids will produce very toxic fumes. Unless properly packed and very carefully handled, they are a source of potential danger.

Aerosol Cans, coupled with decreased cabin pressure, may result either in leaks if the can is not properly sealed, or in the contents being expelled at a much greater rate than normal when used. They are also very susceptible to heat, and there have been incidents where cans have exploded as a result of becoming overheated in an aircraft cabin.

Conclusion

The hazards of incorrectly packing or shipping dangerous goods are so extreme and obvious it's difficult to believe that any individual associated with the aviation industry would do so deliberately. Anyone who has any doubts regarding the safety of air cargo should always check to ensure that all safety regulations have been met before that cargo is dispatched or accepted for shipment.

Flying Hour Milestones

10,000

Maj Robert J. Rayburn, Jr., 36 TAS
CMSgt James E. Newberry, 707 MAS

5,000

Lt Col Martin Byrne, 731 TAS
Lt Col Clyde L. Clem, III., 701 MAS
Lt Col Ronald C. Decker, Det 2, 1401 MAS
Lt Col Angus M. Duff, 901 TAG
Lt Col Darwin G. Edwards, 1 HS
Lt Col Jim L. Folsom, 731 TAS
Lt Col Robert D. German, 53 MAS
Lt Col Lester R. Gibson, Det 2, 1401 MAS
Lt Col John J. Heinze, 193 SOS
Lt Col Owen W. Hickey, 193 SOS
Lt Col William R. Johnson, 56 MAS
Lt Col Kenneth Lehr, 901 TAG
Lt Col Roy C. Lewis, 731 TAS
Lt Col John W. McClenny, 56 MAS
Lt Col Kenneth J. Orne, Det 2, 1401 MAS
Lt Col Robert A. Reilly, 11 AAS
Lt Col William K. Swarthout, 167 TAS
Maj Stephen Baker, 901 TAG
Maj William C. Barnich, 167 TAS
Maj Lynn S. Cook, 56 MAS
Maj Thomas P. Donovan, 337 TAS
Maj Robert A. French, 773 TAS
Maj Larry T. Klobe, Det 1, 89 MAW
Maj Fredrick K. Koerner, 167 TAS
Maj Johannes T. Korver, 7 SOS
Maj James M. Randel, 36 TAS
Maj John Steele, 731 TAS
Sq Leader David F. Goodman, 20 MAS
Capt William J. Crites, 56 MAS
SMSgt Frank C. Solis, Jr., 68 TAS
MSgt Hermillo Cruz, Jr., 68 TAS
MSgt Richard Dickow, 731 TAS
MSgt Jean P. G. Doyon, 50 TAS
MSgt Richard J. Kaminski, 57 MAS
MSgt John H. Mink, 7 SOS
MSgt Leonard E. Pitcher, 7 SOS
MSgt William W. Smith, Jr., 57 MAS
TSgt Merlin Luft, 731 TAS
TSgt Mateo R. Martinez, 62 TAS
TSgt Tyrone C. McManus, 7 SOS
TSgt Telmo G. Mediavilla, 7 MAS
SSgt John J. Hart, 7 MAS

2,500

Maj Don E. Bressett, 1 HS
Maj Ronald C. Cunningham, 1 HS
Maj Larry R. Garey, 1 HS
Capt Eric W. Bulfinch, 41 RWRW
SMSgt Alvin A. Malone, 1 HS
TSgt Rufus R. Rodriguez, 1 HS

(Ranks and units are those at time of award. See MACR 900-3 for details on how to apply for your own milestone award.)

Bringing 'Em Back Alive

by 1st Lt. Stephen J. Robison
1402d MAS
Andrews AFB, Maryland

It's the end of a long day on a CT-39 that began with a 0400 show for a 0600 go, and for once, your passengers actually arrived early. After your first airplane "broke" with an inop UHF, causing a late take-off, you've run twenty minutes late all day. Now, finally back on schedule thanks to two quick turns and a box lunch out of Randolph, you begin to relax. On board you've got one duty passenger and one space-A, an Army private on emergency leave. With the after take-off and climb checklist complete, home is only an hour away.

Your copilot is finishing the paperwork. The day is practically over. Then you notice your space-A passenger, looking rather pale, has appeared between the seats and is leaning into the cockpit.

"Come up to take a look around?" your copilot asks.

"I, ah...I think there's something wrong with the...umm...the other guy," he says. The "other guy" is a major general.

"Go take a look, Spike," you tell your trusty right-seater.

A moment later the copilot's voice comes over the intercom. "He's not breathing!"

Go take a look!

Are You Ready?

Everytime you take off with passengers aboard your aircraft, you face the risk of an unexpected medical emergency. This article describes the danger your passengers may face from heart attack, lists the signs that will help you identify that emergency, and offers some practical suggestions for dealing with heart attack victims while airborne. Maybe it will also encourage aircrews to prepare for such emergencies by learning, or relearning cardiopulmonary resuscitation (CPR).

The Risk

With the number of retired personnel using the MAC system for space-available travel, there are a lot of passengers on board our aircraft, some with known heart conditions, who qualify as "high risk" patients for sudden death from heart attacks. Some of the senior officers and other DV passengers who ride on our special air mission and operational support aircraft also fall into a high risk age group.

Risk factors for heart attack aren't

always obvious to the casual observer; stressful work conditions, long term effects of smoking, drinking and poor diet as well as hereditary factors all contribute to a higher risk of heart attack.

Recognizing the signs and symptoms of respiratory distress and heart attacks, as well as knowing what to do about them, can make the difference between bringing back a live patient for medical attention, or a customer for the mortuary.

Know Your Enemy—The Heart Attack

According to the American Heart Association, heart attacks are responsible for over 350,000 deaths yearly which occur before the victims ever reach a hospital. Many of these deaths could be prevented through recognition and timely response by either the victims themselves or observant rescuers.

A "heart attack" is an interruption in the supply of blood to the heart muscle itself. It's caused by an occlusion of any one of many vessels servicing the heart, which results in oxygen starvation and death of heart tissue. Depending upon the size and area of the heart affected, the victim may experience anything from only slight discomfort to severe pain, or even sudden death. Often, sudden death is the first indication that a person even had a "heart condition." Remember, heart attacks can occur in either sex, at any age, anywhere and at any time.

Signals of Heart Attack

Chest discomfort is the most significant signal of heart attack. It's usually a feeling of uncomfortable pressure, or squeezing, sometimes described as a vise-like pain. Chest pain may also spread to the neck, shoulders or arms, especially the left arm. Usually the pain will last longer than two minutes, although it may come and go. Chest pain is also often accompanied by sweating, nausea, difficulty in breathing and shortness of breath.

The victim is in the greatest risk of sudden death within one to two hours after the onset of a heart attack, so prompt recognition and action are essential.

Denial: Your Biggest Roadblock to Detection

Although signals of a heart attack vary greatly with individual victims, two things will almost always be present: fear and denial. A generally healthy person suddenly experiencing chest pain will be frightened by the experience, but the first tendency of practically all heart attack victims is to deny they are having a heart attack. Victims may dismiss their discomfort as "heartburn," or may protest that "it can't happen to me, I'm too healthy." In any event, they'll want you to ignore it. Don't! If the victim shows these signals on the ground, don't depart. Advise the tower of your problem and obtain an ambulance. Request a flight surgeon accompany the ambulance, too.

If a passenger (or crewmember) exhibits these signals in flight, your actions will be influenced by many things such as weather, available fuel, and suitable landing fields. It should *not* be influenced by such factors as the desire to deliver noncritical cargo or personnel on time, or that most pernicious enemy of safety, awe of rank.

Anyone on board your aircraft exhibiting signals of heart attack or difficulty in breathing should be considered to be in a life-threatening situation, and you should act accordingly. Advise air traffic control of your problem and consider landing at the nearest suitable field (military or civilian) where major medical assistance is likely to be available. When you contact the destination command post, pilot to dispatch or civilian agency, tell them you have a suspected heart attack victim on board and request that advanced cardiac life support meet your air-

Closely observe the patient's condition and actions. Denial is the biggest problem in detection of a heart attack.

All photos by the author. Playing the part of the victim is Lt. Col. David Luna, Chief of Airfield Operations and Management at Andrews AFB. His rescuer is 1st Lt. John Kinneer, a first pilot with the 1402d MAS.

Administer oxygen and monitor the patient's pulse.

craft. Since the patient is at greatest risk during the first two hours of a heart attack, expediting delivery of the patient to medical care is time critical.

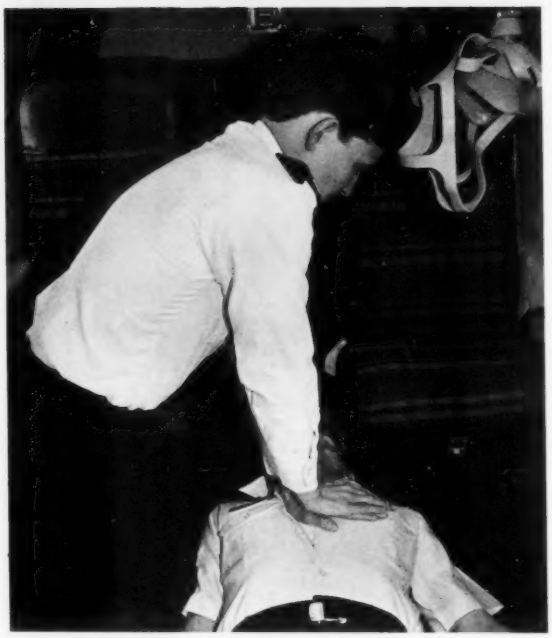
There are two things you can do for conscious heart attack victims immediately:

1. Administer oxygen from either the walk-around bottle or the passenger oxygen system. Increasing the supply of oxygen to the heart attack victim is one of the most valuable therapies available outside the hospital.

2. Monitor the patient's condition. Measure and record pulse, respirations per minute and level of consciousness. Your presence will be reassuring to the victim, and allow you to begin CPR promptly if his or her heart stops.

Cardiac Arrest: Bringing 'em Back Alive

If you determine one of your passengers is in cardiac arrest (no pulse, no breathing), you're going to have one less soul-on-board unless you do something about it. A rescue technique known as CPR is a very effective means of providing the basic support needed to keep a person alive whose heart has



Even small-cabin aircraft, such as the CT-39, have room enough to perform at least one-rescuer CPR, as demonstrated.

stopped— *if* it's performed correctly. CPR combines mouth-to-mouth rescue breathing with rythmical external chest compressions to provide a fresh supply of oxygen and blood circulation for a person whose heart has stopped. It can be performed by one or two rescuers and requires no medical equipment whatsoever. All MAC aircraft, including the smaller CT-39, C-12, and C-21, have sufficient room to perform at least one-rescuer CPR. However, to administer it effectively, the victim must be flat on his or her back, on a hard surface, and in a position as near to

level as possible. This is because CPR chest compressions are only about 30% as effective as the heart working by itself, and you can't efficiently pump blood "uphill" to the brain using CPR chest compressions alone. Therefore, a steep descent, although it may get you on the ground quicker, should be avoided since it won't allow effective CPR to be performed.

Who should perform CPR? Remembering that a life is at stake, the rescuer most qualified to help should administer CPR. Passengers who know what they are doing, and aren't just trying to learn as they go along, can be enlisted to help. But basic life support performed incorrectly isn't going to help the patient, so be prepared to do it yourself. When performed correctly, however, CPR can sustain a cardiac arrest victim indefinitely. Thus, even on long overwater flights you can accomplish a successful rescue using CPR.

Preparation For the Unexpected

With few exceptions, MAC doesn't presently require CPR training for non-medical aircrew members, and it's not the suggestion of this article to add another half-day of training to the crewmembers' mountain of annual requirements. However, the utility of this "bold face" procedure extends far beyond the cockpit. Hearts can stop for any one of a thousand reasons: trauma, electric shock, suffocation, drowning, heart attack. The victim might be a stranger, or a member of your own family, but the rewards of having the skill when you need it are literally beyond measure.

A word of warning to the would-be rescuer at this point. CPR is a basic but a rather precise psychomotor skill and requires several hours of closely supervised instruction to learn it well. This is a skill which can't be self-taught. The use of training films or presentations alone will arm the student with dangerously little knowledge to accompany his good intentions. When learning CPR there's simply no substitute for close supervision by qualified instructors and plenty of hands-on practice.

Classes in CPR are available to interested groups or individuals through the American Red Cross, the American Heart Association and most base hospitals.

One Squadron's Approach

The 1402d Military Airlift Squadron at Andrews AFB annually flies many hundreds of VIP and space-available passengers in its C-21 and C-12 aircraft throughout the United States and Canada. As part of the squadron's flying safety program, pilots are given a presentation on how to recognize the warning signals of heart attack, and are taught the techniques outlined in this article for dealing with the emergency. Most crewmembers also elect to participate in a voluntary American Heart Association CPR class, which provides closely supervised hands-on practice with CPR training mannequins. In addition, every pilot trained in the course is issued a CPR instructions wallet card as a reminder should he or she ever need the skill either in flight or on the ground. (*Editors Note:* Individuals who have completed CPR training must be recertified yearly, so check the expiration date of your training.)

Conclusion

Preparation for medical emergencies on board your aircraft begins with the realization that one can happen to you. Crewmembers who can anticipate, recognize and know what to do in case of a heart attack are safer people to fly with than those who don't.

Finally, it's worth your while, either individually or as part of a unit effort, to learn CPR thoroughly and to refresh your skills frequently. Because when it comes to saving a life, to get the job done right, you just may have to do it yourself. ✈

ABOUT THE AUTHOR

An honor graduate of the Air Force Medical Service Specialist Course, Lieutenant Robison served with the 39th Medical Service Squadron and 40th Aeromedical Evacuation Squadron (AFRES), McChord AFB, Washington, until attending OTS in 1981. He completed pilot training at Williams AFB in January 1983, and currently serves as a C-21A first pilot at Andrews AFB, Maryland. An experienced emergency medical technician, Lt Robison is a certified CPR instructor for the American Heart Association.

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MAC Unit Accident-Free Flying-Hour Milestone Award

(As of 31 Decemb

750,000
76 MAS

550,000
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500,000
375 AAW

450,000
3 MAS
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137 TAW (ANG)

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AC Flyer

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MAC Unit Accident-Free Flying Year Milestone Award

ecember 1983)

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25 Through 29 Years

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193 ECG (ANG)
305 ARRS (AFRES)
312 MAS(Assoc)
313 MAS (Assoc)
731 TAS (AFRES)

20 Through 24 Years

Det 11, 39 ARRW
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Det 5, 40 ARRS
Det 18, 40 ARRS
54 WRS
58 MAS
63 TAS (AFRES)
97 MAS (Assoc)
130 TAS (ANG)
137 TAW (ANG)
142 TAS (ANG)
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10 Through 19 Years

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31 ARRS
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Det 2, 37 ARRS
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Det 5, 37 ARRS
Det 6, 37 ARRS
Det 7, 37 ARRS
Det 8, 37 ARRS
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Det 6, 40 ARRS
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68 TAS (AFRES)
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512 MAW (Assoc)
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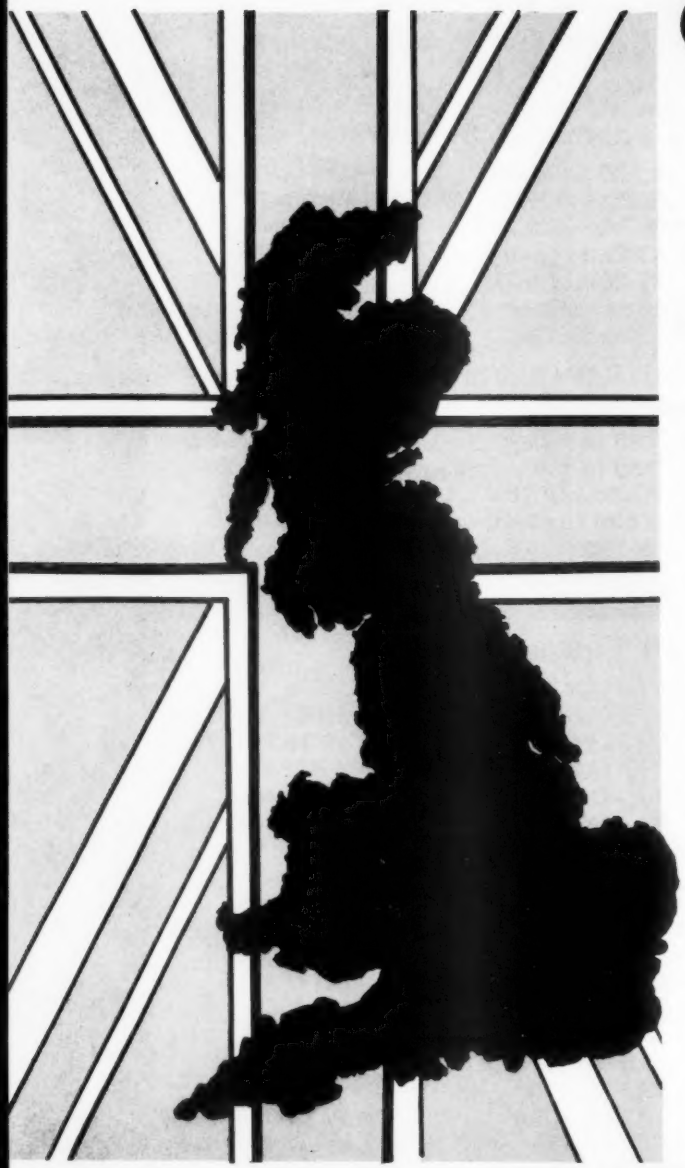
Altimeter Setting Procedures In the United Kingdom



Captain Randy Durham's "Flying in the United Kingdom" article (September 1983, *The MAC Flyer)* provided some useful guidance and information on UK procedures. His example used to illustrate the pitfalls of flying at or near the transition level, however, may have inadvertently created a false impression. In that example, an aircraft under radar control in the vicinity of an airfield could, as a result of complying with the UK altimeter setting procedures, meet head-on with another aircraft flying below the transition altitude. That isn't true.

I've attempted to put this point in its true perspective, and to provide one or two more items of added information and advice which may be helpful to MAC aircrews visiting the United Kingdom. To simplify a fairly complex subject, I've divided the information into theory and practice.

THEORY

Transition Altitude

The ICAO definition of transition altitude is "the altitude in the vicinity of an aerodrome at or below which the vertical position of an aircraft is controlled by reference to altitudes." (See FLIP, General Planning). In the United Kingdom, the transition altitude is always 3,000 feet except for the following airspace:

London TCA	6,000 ft
Manchester TCA	4,000 ft
Scottish TCA	6,000 ft
Honington Military CTZ	4,000 ft
Cross Channel Special-Rules Airspace	4,500 ft ★
Aberdeen Special-Rules Airspace	5,000 ft ★

★ The transition altitude in the Aberdeen and Cross Channel areas reverts to 3,000 feet outside normal hours of operation. (Infor-

by Wg. Cdr. Cyril B. Adcock, RAF
HQ MAC/DOV
Scott AFB, Illinois

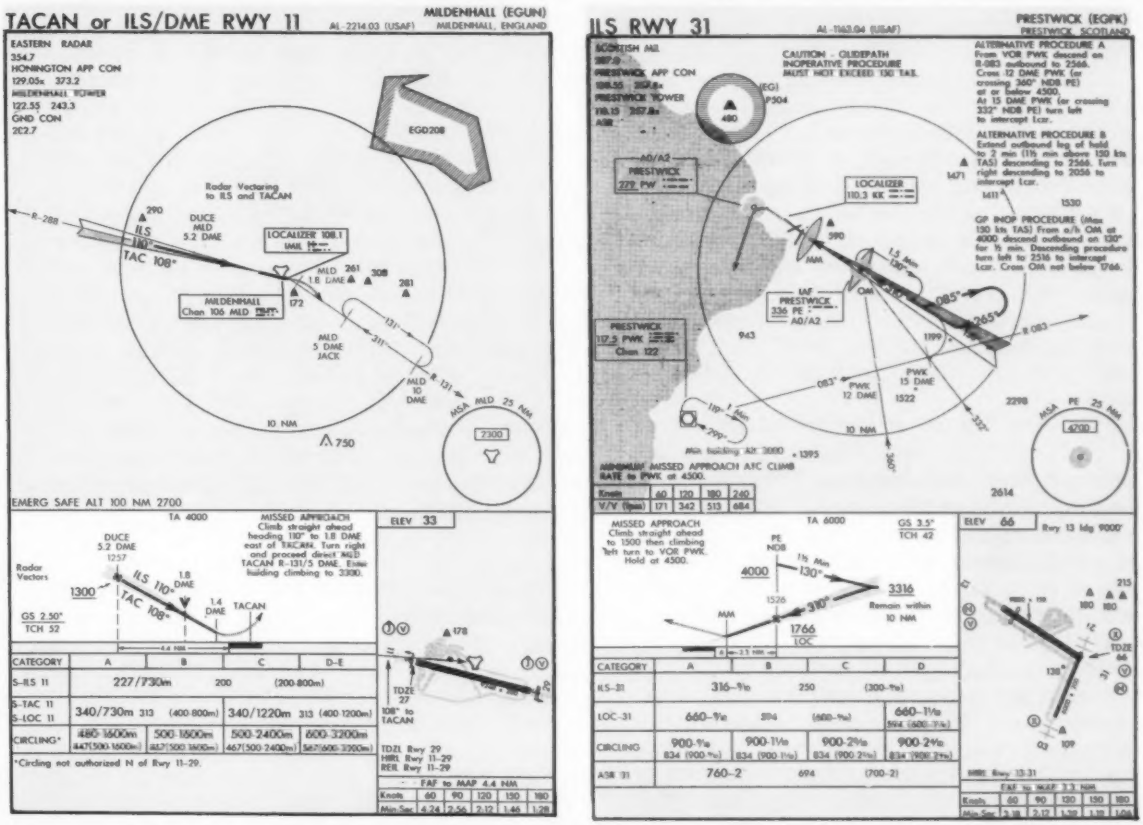
mation on transition altitudes in the UK can be found in FLIP, AP/2, Europe-Africa-Middle East.)

Transition Level

Transition level is defined as "the lowest flight level available for use above the transition altitude." (See FLIP, GP.) Aircraft operating at or above the transition level should have the standard pressure setting (29.92) set in the altimeter. An altitude correction factor is applied to the transition level by air traffic control in order to establish a lowest usable fight level. This altitude correction conforms to the table given in the FLIP Enroute Supplement for Europe, North Africa, and the Middle East (ENAME), under the heading "Transition Altitude/Transition Level in the UK." The lowest usable flight level is raised by 500 feet for every half inch (0.50 in) reduction in the QNH below 29.92, and this correction ensures that aircraft flying quadrantal or semicircular cruising levels always have adequate vertical clearance from other aircraft which are at or below the transition altitude.

Transition Layer

The transition layer is the airspace between the transition altitude and the transition level. The depth of this layer will normally be insignificant and will in any case never exceed 500 feet. It is, therefore, not normally possible to achieve standard



Transition altitudes for UK airfields vary depending on location. Shown here are Mildenhall and Prestwick.

vertical separation in the transition layer, hence the requirement for a lowest usable flight level.

PRACTICE

Departure

An aircraft departing a civil or military airfield in the UK should change to the standard altimeter setting (29.92) when climbing through 3,000 feet on the airfield QNH unless the airfield is one of the special cases listed in the DOD FLIP AP/2. Don't forget that Prestwick and Mildenhall, two UK airfields used regularly by MAC aircraft, lie respectively within the Scottish TCA and the Honington Military CTZ, where the transition altitudes vary from the normal 3,000 feet. Note also that if you depart an RAF or RN airfield where altimeter setting procedures are based on QFE, you'll reach the transition altitude when the altimeter reads 3,000 feet minus the airfield touchdown zone elevation for the active runway. (This is a point for purists since most airfields in the UK lie below 500 feet MSL.) If you don't fly across the Atlantic regularly, the relatively low transition altitudes in the UK and other countries in the ENAME region could trip you, so beware! If your aircraft is fitted with an altitude command marker, a good technique is to set the departure airfield transition altitude before calling for your clearance. You will then be reminded of the transition altitude when you subsequently reset the command marker to the initial cleared altitude or flight level.

Enroute

If you are flying in controlled airspace, your cruising flight level altitude will be determined from the standard pressure setting (29.92). Air traffic control will not give you a level to fly that is below the lowest usable flight level and you will, therefore, always have at least 500 feet vertical clearance above aircraft flying below the transition altitude in the vicinity of an airfield. If your mission requires you to fly in the lower levels outside controlled airspace, you can determine your lowest usable flight level using regional pressure setting and the table of the FLIP Enroute Supplement for the ENAME region. Remember, though, this chart does not take into account terrain clearance or the quadrantal rule, and you will need to consider these additional factors when determining your cruising level.

Arrival

During the arrival phase of your flight, air traffic control will not descend you below the lowest usable flight level until you are cleared to descend below the transition level. You will then be instructed to set the appropriate altimeter setting and descend to the required altitude (QNH) or height (QFE). Altimeter setting procedures in the UK vary as follows:

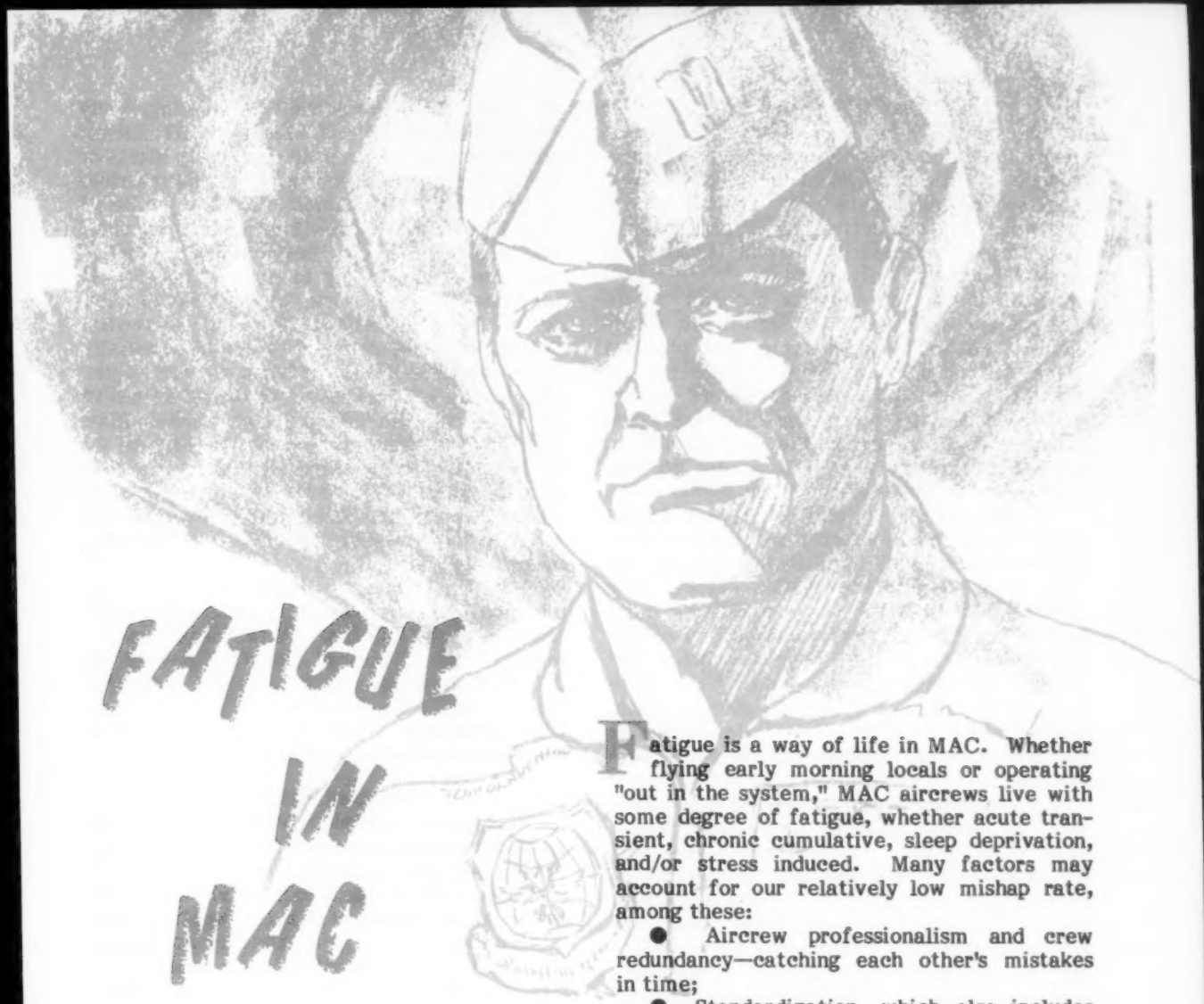
a. USAF Military Bases. USAF military bases use QNH and standard procedures apply.

b. RAF and RN Airfields. RAF and RN airfields use QFE. Your altimeter will read zero when you land. Remember to adjust your approach minima in accordance with the instructions contained in the FLIP Enroute Supplement for the ENAME region.

c. Civil Airports. Altimeter setting procedures for civil airports in the UK are based on QNH, but aircraft are expected to operate on QFE for a radar-monitored final approach. If you wish to do so, you may fly the entire approach on QNH, but you must advise air traffic control of your intentions or they will assume that you are using QFE. If you follow the normal altimeter setting procedure, set the QNH when cleared to an altitude below the transition level. Air traffic control will usually advise you when to change to QFE, but if they fail to do so, you should set the QFE once you are established on the final approach path. If you fly the final approach on QFE and you carry out the missed approach procedure, remember to reset the QNH so that the readout on your altimeter will correspond with the altitudes on your approach chart.

Summary

To the uninitiated, the altimeter setting procedures in the UK can appear rather confusing. If you understand the rules which are listed in FLIP GP, AP/2 and ENAME, the practical aspects are quite straightforward. I can end only by echoing the excellent advice offered by Captain Durham. Before visiting the UK, "sharpen your darts and do your homework." That way, you'll avoid the pitfalls and ensure a safe and pleasant flight.



FATIGUE IN MAC

by Col. (Dr) Grant B. McNaughton, MC
Air Force Inspection and Safety Center
Norton AFB, California

Fatigue is a way of life in MAC. Whether flying early morning locals or operating "out in the system," MAC aircrews live with some degree of fatigue, whether acute transient, chronic cumulative, sleep deprivation, and/or stress induced. Many factors may account for our relatively low mishap rate, among these:

- Aircrew professionalism and crew redundancy—catching each other's mistakes in time;
- Standardization, which also includes keeping safety first; and,
- Aircraft commanders with the ability to recognize when crewmembers (including themselves) are becoming fatigued, and who have the sense and guts to call "time out" when indicated.

There are, however, two big gotcha's of fatigue working against MAC crews. One is letting fatigue sneak up, getting the whole crew so tired that no one minds the store, thus losing that all important redundancy. The other gotcha is the aircrew getting trapped into performing lots of useless work; they need more rest, but are so wound up, they don't take advantage of the required opportunity to get it.

What Is Fatigue?

Fatigue may be defined as a debt, both physiologic and psychologic, arising from prolonged or intense physical or mental effort, followed by inadequate rest. Fatique is both individual and subjective: crew rest compliance doesn't necessarily prevent it, nor does a violation necessarily cause it.

Fatigue may be acute or chronic. Acute fatigue can arise from any significant shortening in one's usual sleep cycle, from physical work, stress, or long hours. Acute fatigue commonly accompanies circadian rhythm upsets, especially when traveling eastward. Crossing time zones to the east results in earlier bedtimes, when it's harder to fall asleep, and earlier wakeup times.

Humans exhibit a daily activity-alertness-performance cycle roughly parallelling their temperature cycle, and usually hitting the "low point" one to two hours before their normal wakeup time. At these low points, people are generally most difficult to arouse and require more time to get going. The ability to adjust to multiple time zone changes is improved by factors such as youth, good physical condition, motivation, outgoing personality and stimulating social interaction.

Chronic fatigue can arise from work practices or chronic sleeping difficulties, whatever their origin. In military settings, a common cause is the long duty day/long work week, week after week. A common victim is the middle-level supervisor—the individual with a combination of extensive job responsibilities, yet sufficient visibility to preclude sneaking off early. Chronic fatigue can also arise from sleeping difficulties generated by the emotional strains of financial, social or marital problems.

Causes

Causes of fatigue in MAC may be classified as follows:

- Recognized work: Ground training, mission planning, physical flying, decision making, long crew-duty days (CDD) and consecutive long CDDs.
- Useless work: Irritants, false starts, delays, hassles, frustrations, interpersonal difficulties.
- Facilities: Unavailable or inadequate messing or crew rest facilities—or excessive time required to reach them.
- Crew Rest Problems: Scheduling, body clock disruptions and sleeping difficulties, inadequate or interrupted rest, early alerts or being alerted when your body thinks it's time to go to bed. A common complaint is the 24 hour layover. The crew lands relatively tired and ready for sleep; they sleep 8 hours and then are awake, ready to work or play. Not scheduled for any work, they'll tend to play, or at least remain awake and somewhat active, over the next 12-14 hours (especially if it's daytime locally). When they're beginning to tire and are ready for bed, it's time to go fly. Because of this, many crews have voiced a preference for crewrest times of 15 or 36 hours, which permit either one or two good sleep cycles and let them step to the aircraft refreshed. According to experienced MAC crewmembers, 24 hours is just the wrong length.
- Physical problems: Insufficient exercise; constipation; discomfort from sitting for hours or from hot spots in the seat/cushion; improper diet; factors interfering with an inflight nap such as heat, noise, or dehydration; being a non-smoker on a flight deck with smokers; after-effects of excessive socializing and alcohol; and sunburn.

Effects of Fatigue

Fatigue is hazardous because it erodes judgment, compromises performance, and predisposes one to illusions and disorders of attention. There is a loss of vigilance and alertness, a slowing of mental functions, and inattention. There is a tendency to fixate, stare and channelize attention; a tendency to forget or omit items; to accept lower standards of performance; to commit more errors, yet fail to catch them. There is a tendency to become preoccupied with one task component to the exclusion of others. Furthermore, a fatigued crewmember is prone to spatial disorientation and to misperceptions of all sorts, whether they be finite objects, reading the map or checklist, distance judgments or time perception. Fatigue produces carelessness, forgetfulness, sloppiness, slowed or inappropriate reactions, and indifference.

Recognizing Fatigue

Common subjective signs are irritability, distractibility and difficulty in thinking. Some physical signs include muscle aches, poor coordination, headache, chills, nausea,

washed-out complexion, dull or bloodshot eyes, slurred/slowed speech with tendency to skip over checklist items, continual yawning, slowed/inappropriate reactions, inattention, and nodding off. (Note that many of the signs and symptoms of fatigue resemble those of marginal hypoxia, which can itself induce fatigue.)

Some Cures

The basic cure for fatigue is to obtain adequate rest, at least eight hours horizontally, before alert. Of course it's best to sleep, but even if one can't fall asleep, resting quietly in darkened, quiet surroundings that are as non-stimulating as possible is of some restorative value and is better than nothing. Other important measures include adequate diet and hydration, plus some exercise.

Diet

A diet high in protein provides more energy over the long haul. You should therefore eat meals which are high in protein.

Carbohydrates, on the other hand, are great for a quick wake-up boost, but often cause a rebound drop in the blood sugar one to two hours later, which may cause drowsiness. You may be able to use this to your advantage, though. Take some ready source of sugar, such as life-savers, to help wake up for, say, a demanding approach. Also, that quick dose of carbohydrates won't interfere with your going to sleep later on, and may even help.

Hydration

This is a significant problem on long trips in dry aircraft, like most of MAC's. Drinking caffeinated beverages like coffee can actually dehydrate you since they increase urine output. Best liquids for hydration are juices, water and milk (especially skim milk). The simplest gauge to your state of hydration is the color of your urine; drink sufficient fluids to keep it relatively light.

Exercise

Some form of regular exercise is important. Even simple calisthenics such as 25-50 pushups and/or 25-50 near deep knee-bends can help you wake up before a demanding approach. Even tensing your thighs to support your weight several times for 15-20 seconds, and holding your weight off your seat by tensing your thighs will help clear the mental cobwebs.

A regular exercise program improves your sense of well-being and mental productivity, aids restful sleep and also helps prevent constipation. One experienced crewmember recommends carrying a jump rope: it is easily packed and can be used anytime during crewrest, regardless of weather.

Effects of Some Common Drugs-

The effects of some drugs on fatigue also deserve mention.

Alcohol

In some individuals, small amounts of alcohol actually stimulate them and may interfere with falling asleep; i.e., a night cap may actually tend to keep sensitive individuals awake. Others find that one or two beers or glasses of wine relax them sufficiently to promote falling asleep. On the other hand, too much booze hampers restful sleep. The aftermath of alcohol, whether the victim feels hungover or not, includes a measurable decrement in performance. Over-partying the night before flights wears down your resistance to fatigue and increases your vulnerability to psychic stress.

Caffeine

Caffeine may interfere with sleep. In sensitive individuals this effect can last over 12 hours. Caffeine is present in many soft drinks as well as cocoa, tea and coffee.

Nicotine

Nicotine from smoking can impair night vision as well as general brain functions. Smoking may be exceptionally irritating to non-smokers, increasing dissension in the ranks when your flight can least afford it.

Aspirin

Long known to cause stomach irritation, gastrointestinal bleeding and ringing in the ears, there is now some indication that aspirin may also impair vigilance.

How to Cope With Fatigue

Fatigue-coping techniques are largely individual, but we offer several suggestions. First, there are the system's survivors, the "old heads" who have developed relatively

effective coping techniques for themselves. These folks constitute a gold mine of experience and are generally only too happy to pass on their knowledge and ideas.

Second, most MAC units have an institution known as "the dollar ride," an introductory seven-to-ten day flight out into the system. The dollar ride is a marvelous opportunity for the newcomer to learn about him/herself, see what seems to work, and develop personal fatigue-coping techniques.

Finally, there's the cat nap. Here again, there are large individual differences. Generally, most of us find a 5-15 minute cat nap, or even several short naps, quite refreshing. If you're really beat, you can cram a considerable amount of valid recuperative rest into a relatively short period. Others have observed that a nap of an hour or two each leg may help cope with the time zone changes and odd crew rest periods. Even without falling asleep, just closing the eyes and stretching out as horizontally as possible for a little while helps restore alertness.

If you actually fall asleep and have trouble waking up, our best advice is to get out of your seat/bunk, do some isotonic calisthenics, wash your face with soap and cold water, and chew a couple of life-savers. The decision regarding caffeine at this point should take into account the amount of stimulation you require versus your personal sensitivity to falling asleep later on.

Aircraft Commanders' Responsibility

Despite all the strategy and coping techniques, the AC has the option and the responsibility for securing appropriate crew rest. This is a decision not to be taken lightly since he or she may quite likely have to explain it to the boss or to higher HQ. So what should go into the "press vs. rest" decision?

Crew

- Ability/proficiency/experience
- Compatibility/motivation
- Fatigue

Aircraft

- Any problems increasing demands such as an inoperative autopilot axis.
- Anything interfering with an enroute nap.

Mission Demands

- Enroute weather
- Duration, complexity
- Destination weather, visibility, night, crosswinds, quirks in the approach/aids, chances of having to divert.

Since MAC doesn't routinely fly with integral crews, the AC may not have met all crewmembers until that initial predeparture briefing and may not know their capabilities, strengths or weaknesses until sometime into the mission. It is important to establish, early on, an atmosphere of trust and communication—if for no other reason than to insure the crew will voice their fatigue concerns.

It is a mark of professionalism for the AC to recognize significant fatigue in the crew, including of course him/herself, and factor that into the "go/no go" decision. Responsible leadership will do something about fatigue when indicated. MAC 55-XXX regulations provide some options.

An AC may request a crew enhancement delay, essentially a request for a later alert time to normalize the crew work/rest cycle or enhance messing options immediately prior to crew alert. Another option is for the AC to declare additional crewrest in the interest of flying safety. But again, consult the appropriate regulations.

The key to safe mission accomplishment in MAC is the AC as a leader. The AC should be ever mindful of the big "gotchas" of fatigue, and should:

- Take charge of establishing good working relations and rest patterns;
- Set the proper example off duty as well as on, including sensible diet and adequate sleep;
- Open the lines of communication and communicate;
- Get to know the crew as well as possible and what pressures they're under; and
- Take care of him/herself and the crew—look out for them and motivate them, but be able to recognize when each has had enough and is becoming dangerously fatigued.

In summary, aircrew professionalism is crucial to safety in MAC. Aircrew redundancy may help ensure that jobs are being performed correctly and that errors are caught in time. But it's still up to the AC to insure that performance isn't compromised by fatigue. The AC is ultimately responsible for the safe conduct of that mission and shouldn't hesitate to exercise the option to extend crew rest when indicated.

C.R. TERROR

The Fumbling Flyboy Infuriates A Fire Fighter

Only 200 yards to go, C.R. Start your finishing kick *now!"* The booming voice of Col. William "Bullmoose" Bushwhacker reverberated around the McMac AFB track. "C'mon Terror, only 30 seconds to go. *Get moving!"*

It appeared all the cheerleaders in the world, screaming in unison, couldn't reach C.R. Terror now, for he was concentrating on only one thing—that white chalk line only 100 yards ahead. As his lungs burned and his legs turned to lead, he reached back for that last bit of stored energy. Unfortunately, there was none. But his momentum—and there was plenty of that—carried him across the finish line anyway, and into the waiting arms of his cheering crew.

"Boss, I don't believe it! Eleven minutes and 59 seconds! That beats your previous record by over five minutes. Way to go!" His crew continued their excited praise as the Winded Warrior slumped wearily to the grass.

But the Sultan of Strain couldn't even summon the energy to acknowledge the adulations of his crew and of an astonished Bushwhacker. Finally, though, he raised his sweat-soaked head and croaked, very softly, "Water!"

Quickly, Long Suffering Sam offered him a small cup of water. The Jaded Jogger waved it away weakly and in a slightly louder voice demanded, "More water...need a bucketful!"

Alarmed and fearing heat prostration, Blinky sped off to the gym, soon returning with a bucket brim-full of ice-water. "Here, Boss. Just take a sip. Don't overdo it or you'll get cramps." He failed to see the hint of a smile cross the Malevolent Major's face.

Struggling to his feet, C.R. slowly reached for the bucket and, with great effort, lifted it and turned to the group beside him.

"This one's for you!" he whooped, nearly scaring them to death. With that, he pivoted on his left foot and showered them all with the paralyzingly cold water, reserving the majority of the contents for Bullmoose.

"Ah, ha! You thought old C.R. was ready to collapse, didn't ya? Well, surprise, surprise! I've never felt better." Grinning from ear to ear, he sprinted towards the gym. "Be back after a quick shower," he yelled over his shoulder. "Time for a Terroriffic Celebration!"

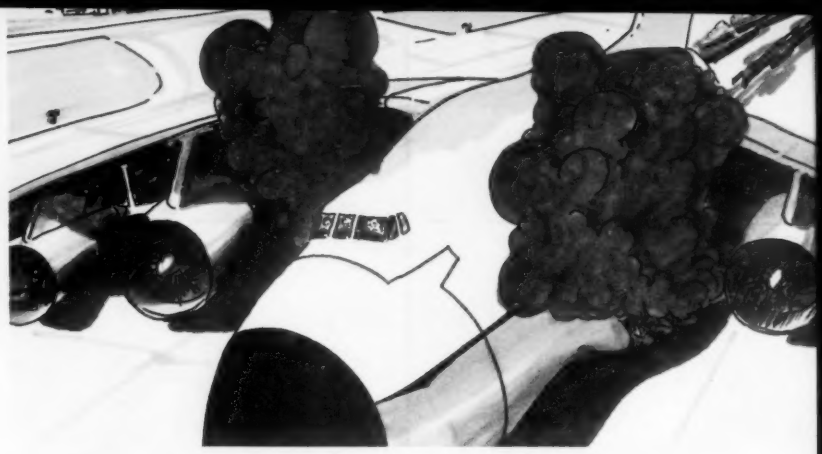
"Well I'll be..." Bullmoose shook his head and began to laugh. "That chubby major really had me going. Staggering across the finish line was all an act. He really *must* be in shape. Amazing!"

The post-aerobics celebration was *vintage* C.R. In fact, the only reason the celebration ever stopped was that, as dawn appeared, the unthinkable happened. C.R.'s custom-built, climate-controlled wine cellar was *vintageless!* Not even a bottle of the Wizard of Winery's personal stock of private label Chateau Thunderfowl remained.

"Boss, we've got to get home," Sam finally groaned. The kids are playing little league today, and the wives are selling cookies at the BX to raise money for an orphanage. Oh, by the way, we're all scheduled for an 0600 local on Monday. You're the IP." Wearily, they slipped out the door, nearly trampling the tall, stunning blonde opening the door to the next condo.

At precisely 0600 Monday morning, C.R. deftly eased back on the yoke and guided the trusty C-5 into the air.

"Gear up!" he barked cheerfully. "Egads, what a beauteous day for aviating!" C.R. was sure he'd enjoy this mission, even if it was just another local training mission. But after three hours of stuttered approach briefings, unrecognizable approaches and pranged landings, C.R. wasn't too sure.



"Boring! Boring! Boring!" he muttered. "The same thing, copilot after copilot. My kingdom for someone who can recognize level flight, much less maintain it! What we need is some instruction here. Copilot's aircraft," he drawled to the young pilot in the left seat. "Ever seen a C-5 do a min-run landing, pilot?" Not even pausing for an answer, not to mention a breath, he continued, "Of course you haven't. Why should you? Nobody in this wing knows how to fly one except, of course, yours truly. Hows about I demo one for ya, just to show I, too, have 'the right stuff.' Sit back and watch a master at work." The tension level in the cockpit began to rise—rapidly!

"Crew, the secret to stopping the old Galaxy on the proverbial dime is the judicious application of maximum brakes, followed by a large dose of reverse thrust. After much experimentation, I've discovered the optimum technique." His crew became even more anxious.

"Boss, should we be doing this? It's not mentioned anywhere in 55-2." Occupying the jumpseat, Sammy's concern was very real.

"Not to worry, Samuel m'boy. I've got all the angles covered. All I gotta do is jump on the binders just before landing and the trusty antiskid will take care of the rest. Just make sure Lootenant Smyth here goes to full reverse thrust when I call for it." C.R. continued to brief his non-standard techniques until just before touchdown, when he stomped on both brake pedals and yanked the throttles to idle.

"Sink rate's too hi..." Sammy's panicked warning was too late as the Largest Lockheed impacted the runway at well over 900 feet per minute.

"Spoilers! Reverse thrust! Throw out the anchor!" C.R. shouted orders until the Galaxy ended its brief ground roll in a cloud of blue smoke from the 24 straining main landing-gear tires and brakes.

"Yee, hah! Whoa, hoss! Will you look at that Sammy? A new world record for me and the C-5. Looks like about 1,750 feet to me. Those Herk drivers will have a tough time matching this."

But the babblings of the Ace of Assault were lost on

Sammy as he listened intently to a high-pitched voice coming over the radio.

"Boss, ground says we blew most of the tires on the left side and have a residual fire." Sammy was concerned. The crew was concerned. But C.R.? C.R. continued to bask in the glory of his record-setting landing.

"Boss, shouldn't we deplane the scanner to take a look? The fire trucks aren't here yet; besides, we might need to evacuate."

"Okay, okay! I get the hint, Sammy. No reason to get so terse. Scanner cleared to depart." C.R. appeared to be back in charge. "We'll let the smoke eaters take a quick look-see, then we'll taxi to parking. No doubt tower's overreacting again. Besides, that landing was so precise, we probably didn't even scuff the tires." The Miffed Major settled back in his seat and waited for the scanner's report.

"Copilot, scanner." Max Torque's voice sounded strained.

"Go ahead." C.R. answered nonchalantly.

"Sir, we definitely blew a bunch of tires on the left side, but with the smoke from the fire, I can't tell how many. The fire chief's here and says we gotta shut down and evacuate."

"Over *my* dead body!" C.R. snarled. "*I'm* the aircraft commander, and *I'm* in charge of this aircraft. There'll be no evacuation until *I* give the order. Max, you tell that fire chief what I said. If he's got any heartburn, tell him I'm in my office, 25 feet above him!"

A few seconds passed before Max spoke again. "Boss, they're extinguishing the fire and the chief's on the way up. I think you're in big trouble. Scanner's going off headset." The sounds of uproarious laughter ended with an abrupt click.

Just then, the door to the flight deck burst open and a tall figure with a hat labeled "Chief One" strode confidently onto the flight deck.

"Who's in charge here?" It was not so much a question, as a challenge.

C.R. pivoted in his chair as the sound of the chief's voice, definitely feminine and undeniably authoritative, reached him. "Major C.R. Terror here, and *I'm* in charge of this, uh, plane." The sight of the stunningly beautiful fire chief silenced the Lockheed Lothario as quickly as a rap on the head with a crash ax.

"Major," the fire chief snapped, "I suggest you read the regulations. Tower declared an emergency and your aircraft is on fire. That means *I'm* in charge, and I'm *ordering* you to shut down and evacuate!" Staring icily at C.R., she growled, "You hear me, Major?"

"Yessir, er, ma'am. I hear you okay, but I'm still the AC here." C.R. wasn't going to surrender command without a battle.

"That's what I figured," the chief retorted. "Now listen closely. I'm ordering you to shut down this aircraft and evacuate! If you refuse, you'll be carried off this aircraft bodily! Do I make myself clear?" Suddenly recognizing the identity of the fire chief, Sammy and the rest of the crew shut down all systems and meekly departed the aircraft. But C.R. remained, stubborn, unyielding and in command to the last.

"No way!" he spat defiantly. "I'm not moving!"

"Major, that's what you think!" she smiled as she deftly unfastened his seatbelt and shoulder harness. "You had your chance!" With that, she yanked the Awestruck Aviator out of his seat and effortlessly lifted him to her shoulders in the classic *fireman's carry*. "Hang on, Major," she warned, "or you'll get down these steps a whole lot quicker than you want!"

Seconds later, she emerged from the silent C-5 with the Prideless Pilot draped morosely over her shoulders. Walking briskly away from the still-smoking Galaxy, she neatly deposited C.R. in the grass beside the runway.

"Any more questions as to who's in charge, C.R.?" she asked with a dazzling smile.

"No *ma'am*! No more questions. But what did you say your name was, just for my black bo...er, for the record?"

Pushing her standard-issue fireman's hat back a bit, she smiled and chuckled. "Why I thought you'd know that, C.R.! I'm Chief Astrid Arsenhalter and I'm your new next-door neighbor!"

Now totally overwhelmed, C.R. smiled weakly and fainted dead away to the sounds of raucous laughter.

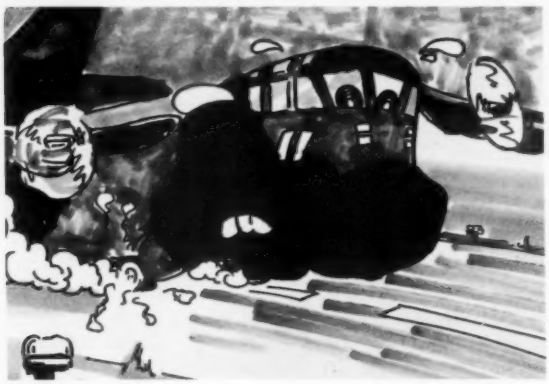
Quick Stoppers

Suicidal Seagulls

The C-5 and its crew were minding their own business as they flew their training mission in the local pattern. Shortly after leveling at the MDA of 600 feet MSL on a TACAN approach, though, they were "attacked" by a small flock of seagulls, and the Galaxy's crew heard the unmistakable sounds of birdstrikes from the underside of the fuselage. The flight engineer then reported the MADAR was indicating an abnormal printout for the number-one engine, so the crew wisely decided to full stop and take a look. Safely on the ground, the maintenance folks found extensive damage to the number-one engine fan assembly and thrust reverser, and discovered a one-inch by six-inch hole in the number-one engine fan cowling. There was also evidence of birdstrikes on slats and flaps, and in all five wheel wells. Hardly a routine ending to a routine local.

Look Out Below!

This is a story of what could have been the ultimate dropped object. The UH-60A crew was on an evaluation flight and was flying around the traffic pattern with an external load—more specifically, a 1,700-pound block of concrete. On final approach with all checklists and equipment checks complete, the load suddenly separated from the helicopter while the aircraft was still 200 feet in the air and traveling at 40 knots. What's more, neither the pilots nor the flight engineer commanded the drop! Luckily (very luckily for those on the ground), the 1,700-pound "pet rock" hit on government property and caused no injuries or damage—with the exception, perhaps, of a king-sized divot. An investigation revealed no obvious cause for the uncommanded drop, but the cargo hook was the prime suspect since it has a history of such malfunctions. Fortunately for those of you who live near bases with Blackhawks, the cargo hooks will be modified starting in August to provide a "concrete" fix.



Brake Dancing

On takeoff roll at about 80 KIAS, the C-130 flight engineer called a reject for number-four prop overspeed. Not a terribly big thing under these circumstances, especially with an IP in the right seat making the takeoff, right? Guess again.

The right seater pulled the throttles back to flight idle and transferred controls to the pilot. At this point, the errant engine should have been shut down, the remaining throttles brought into the ground range and the symmetrical engines reversed. But that didn't happen. Instead, with the throttles still in the flight range, both pilots said they depressed the brakes and noticed nothing resembling braking action. The left seater then brought numbers two and three engines into full reverse, leaving one and four still in flight idle. Not a good thing to do when you're trying to stop. Anyway, the right seat pilot then selected emergency brakes, but nothing happened, at least initially. Finally, the hurtling Herk slowed down, and the left seat pilot turned off onto a taxiway. But it wasn't over yet. Tower gave the crew a call to let them know the right wheelwell area was smoking, whereby the crew caged *all* four engines and evacuated the Herk.

The cause of this one was the pilot's failure to follow specific guidance on reject procedures as prescribed in the C-130 Dash-One. His failure to do so ultimately caused some main landing-gear brake heat damage, as well as some tense moments onboard the aircraft.

Wrong-Way Corrigan Lives

This one comes straight from NASA's Aviation Safety Reporting System.

"After landing, it took about five minutes to get the APU on line. After engine start difficulties, we finally got the engine generators on line after much switching of buses. A normal takeoff and departure followed, and we flew via airways to a destination to the east. About 65 miles from our departure point, I switched to a VOR 150 miles from the departure airport, but was unable to receive it. I then discovered that both the number 1 compass and number 1 CDI were in error by 180°! I switched to number 2 compass, which operated normally. Result: We were 80 miles *west* of the departure point instead of 80 miles *east*! ATC was notified of our problem and we gave them a new ETA for the VOR."

The pilot-in-command believed there were three factors which led to this incident. First of all, he lists the electrical malfunctions which may have started the chain of events. Then, he listed pilot fatigue, citing a "six-hour call-out" for a flight that departed at dawn. Finally, he blamed himself for improperly scanning the instruments prior to takeoff and not recognizing the error. Those are probably true causes, but we wonder where the copilot was during all the commotion. Could *never* happen in this command. Nah!

Quick Stoppers

Dripping Cargo

After a flight from an overseas location to the CONUS, the Starlifter loadmaster was helping unload their bulky cargo, a non-USAF UH-1H. Lo and behold, beneath the helicopter was a puddle of hydraulic fluid, located near the Huey's engine vent line. Most of the errant fluid spilled on the treadway at F.S. 1025, and was wiped up after offloading the dripping chopper. Apparently, the helicopter was improperly prepared for flight.

Another Tail Scrape

About 2½ hours into the local training mission, the IP decided he would try a practice no-flap approach and landing in his C-141B. The Starlizard crossed the threshold about five knots slow and landed firmly. The aircraft seemed to come up on the struts, although the main wheels were still on the runway. The nose wheel was still in the air. Having trouble bringing the throttles into reverse idle, the IP called for spoilers before the nose wheel touched down. The left seater deployed the spoilers which opened partially to just above the flight limit. As this happened, the nose pitched up noticeably, and the belly scraped the runway. Fortunately, the repair costs were under $900.

Struck Herk

There's nothing particularly taxing about a passenger airlift mission, right? Well, not quite, and especially not when the weather isn't cooperating. On just such a CONUS "milk run," one C-130 crew ran into a little more than they bargained for.

Thunderstorms had been forecast for most of the route, and the radar wasn't useful beyond about 50 miles. Approaching their destination, the crew managed to pick their way through the first line of CBs, even though they were in honest-to-gosh actual IMC and even though the radar's effectiveness was limited. About to hit another line of thunderstorms head-on, the crew got a 90° vector from ATC to parallel the line. The pilot realized the conditions were ripe for a lightning strike (altitude 14,000 feet and OAT of 0°C), and requested a descent to pick up some warmer air and attain visual conditions. ATC told the crew to descend to 10,000 feet. While in the descent, the crew observed St. Elmo's fire building on the radome. About 10 seconds later, *ZAP!* Luckily, only the radar died, with no apparent damage to the other electrical components.

On the ground, the crew discovered a one-inch hole in the radome surrounded by a ten-inch delamination. Total cost to repair the damage will probably exceed $3,000.

After Deadlines

FEDERAL EXPRESS JOINS THE CRAF—Agreeing to commit three of its DC-10-30 aircraft to the international segment of the Civil Reserve Air Fleet, Federal Express recently became the CRAF's newest member. The Federal Express DC-10s join approximately 390 other commercial aircraft in the program under which U.S. air carriers voluntarily commit aircraft to support Department of Defense airlift requirement during contingencies. The CRAF accounts for approximately 50 percent of MAC's total airlift capability. (*TMF* will publish an article in the August magazine highlighting the DC-10 and the air carriers who fly them in the CRAF.)

AIRLIFT ASSOCIATION CONVENTION—The 1984 Airlift Association convention will be held from 26 to 28 October at the Red Line Motor Inn in Sacramento, California. Contact your local Airlift Association chapter for further information on this year's convention. Plan now to attend.

TMF NEEDS PHOTOS—The editors of *TMF* need your photos. Specifically, we're looking for good, clear black and white photos of MAC personnel and aircraft involved in accomplishing the MAC mission. We need photos taken at all times of day, in all kinds of weather, and from all locations worldwide. All photos become the property of the *Flyer*, but we'll gladly give photo credits where appropriate.

KNOW OF AN ACCIDENT WAITING TO HAPPEN?—If you see something that has the potential to cause an accident, take the time to fill out a MAC Form 325, the AWTH form, and send it to the AWTH monitor at HQ MAC/IGFF, Scott AFB, IL 62225. Once your AWTH submission is received, it's reviewed and appropriate information is input into a computer data base dealing with human factors causes for mishaps. When applicable, information from AWTH inputs is forwarded to headquarters directorates for action. Unfortunately, though, no one will know of the Accident Waiting To Happen that you've discovered unless you tell someone about it.

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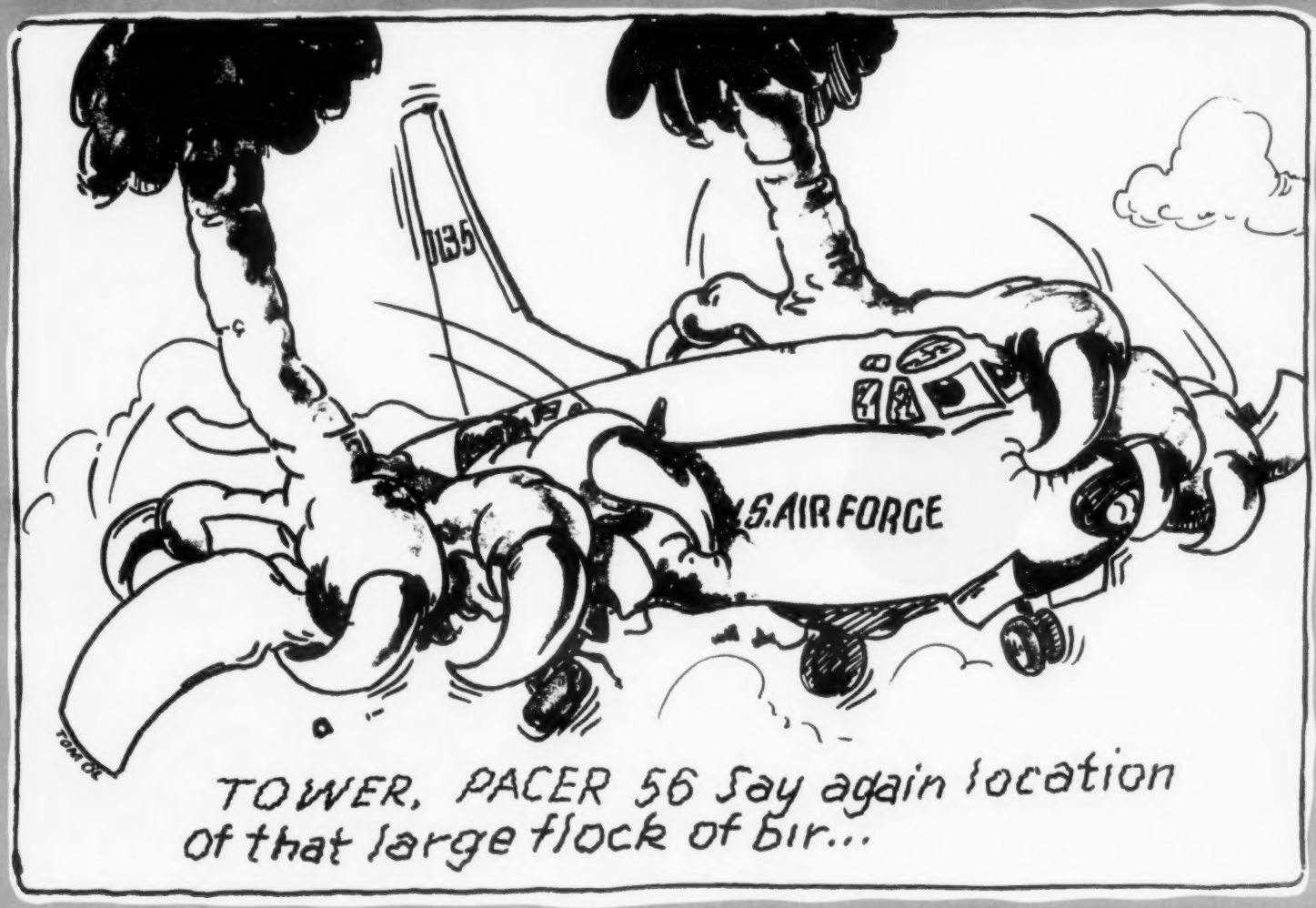
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